

Rejections under 35 USC 101

Applicants have amended claims 269, 283, 284 and 289 to address the Examiner's rejection under 35 USC 101. In particular, the words "suitable for" have been added to each claim to make it clear that applicant is not claiming a portion of the human body. Claim 269 and 289 have been amended to read "an internal electronics unit *suitable for* implantation with a living body." Claims 283 and 289 have been amended to read "a plurality of electrodes *suitable for* stimulating a retina." Claim 283 has been amended to read "an internal electronics device controlling said plurality of electrodes and *suitable for* positioning with a vitreous humor, but distant from a retina."

Rejections under 35 USC 112

Applicants would like to direct the Examiner's attention to figures 13 and 14, and the accompanying description on page 27. Hermetic feedthroughs 1304 are shown in both figures and described on page 27, line 23. The hermetic box is generally shown 1302 and 1402 in figures 13 and 14 respectively, and on page 27, line 17 - 33. The term metal ring has been changed to sidewall. It should be clear from the drawings that the sidewall is ring-shaped. The word lid is changed to top to be consistent with the specification. Welding the metal top is described in page 27, line 30 – 33.

Claim 273 has been amended to depend from 271 rather than 269, correcting the antecedent basis for the ceramic portion. Claim 293 has been amended to depend from 290 rather than 269, correcting the antecedent basis for the ceramic portion. This should clear up the relationship between the feedthroughs and the ceramic portion.

Claim 274 has been amended to state that "said metal portion comprises a metal sidewall joined with a metal top by a weld joint." Further, claim 271 states that "said hermetic box includes a metal portion and a ceramic portion." This should clarify the relationship between the sidewall, top and hermetic box. Equivalent changes have been made to claim 294.

The Examiner is correct that claim 290 should depend from 289, not claim 269. Claim 290 has been amended accordingly.

Rejections under 35 USC 102

Applicants submit that, at only 5,000 angstrom thick, the silicon dioxide (SiO_2) as described in US Patent 5,109,844, (de Juan) is not hermetic. This process is commonly used to prevent further oxidation of integrated circuits when exposed to air. It is completely inadequate to protect integrated circuits when exposed to saline. Saline dissolves SiO_2 . Further, the selective etching process, as described in de Juan would breach any limited sealing properties provided by the SiO_2 layer. Applicants' position is supported by the attached declaration of Dr. Dao Min Zhou; *Etching of Oxides from Electrochemistry of Silicon and Its Oxide* by Xiaoge Gregory Zhang, pp. 151 – 165; and *Simulation of surface changes during long-term glass corrosion*, a presentation by the Institute of Chemical Technology (Czech Republic); copies attached.

In the present application, we apply a hermetic coating by ion-beam assisted deposition. SiO_2 was presented as a possible alternate embodiment. While an SiO_2 coating applied by ion-beam assisted deposition may be more hermetic than a grown SiO_2 coating, applicant now believes SiO_2 is not effective as thin film hermetic coating whether grown (as described in de Juan) or applied by ion-beam assisted deposition (as described in the present application) due to its poor ability to resist saline.

Rejections under 35 USC 103

Applicants refer to the above analysis with respect to de Juan. Schulman discloses a glucose sensor, not a neural stimulator. Further, Schulman discloses ion-beam deposition or ion enhanced evaporation, rather than ion-beam assisted deposition as disclosed in the present application. Ion-beam assisted deposition creates a more dense coating which requires less thickness to be hermetic. De Juan makes no suggestion of the need for a hermetic coating. Schulman make no suggestion of application of his coating to a retinal prosthesis. Hence, there is no suggestion in either prior art reference that would lean one skilled in the art to combine the two references. Applicants have withdrawn the apparatus claims directed to a ceramic thin film

and replaced them with method claim to making a visual prosthesis by applying a ceramic coating by ion-beam assisted deposition. The prior art, either singly or in combination does not disclose the use of ion-beam assisted deposition to create a hermetic package.

Davidson discusses coating electrical leads for wear resistance. Davidson does not address implantable electronics or forming a hermetic seal. Davidson only coats those portions of his implant that are high wear surfaces. Davidson can not create a hermetic seal without coating the entire device. Davidson's invention is a biocompatible conductor. Since, the conductor is biocompatible, there is no reason to add a hermetic coating. Davidson does not consider hermeticity as it is irrelevant to his invention. It would not be obvious to one of ordinary skill in the art to look to abrasion resistance materials to look for hermetic materials.

Drawings Objections

Applicants submit herewith substitute drawings of Figures 1b, 2a, 3d, 4, 6c, 8c, 12 and 20, making corrections per the Examiner's request. In each case the nomenclature is changed to match the language of the specification, or missing reference numerals are added. Corrections to the specification have been made to match the drawings were the examiner has requested such. Reference numeral 121 now refers to the "internal implant". ". . . except where connected by aluminum trace (1207)" has been added to page 26, line 34.

Specification Objections

In the brief description of the drawing, the description of figure 19 is replaced with separate descriptions of figures 19a, 19b, and 19c. The reference to figure 8 (page 24, line6) has been replaced with a reference to "(Figure 8b and 8c, 818)". All reference to 1103 are now to "metal foil". On page 26, line 18 "(1202)" has been deleted. On page 26, line 27, "12c" is now "12d". On page 27, line 21 "(1302)" has been deleted.